

City of Chandler Drought Management Plan

Introduction

The City of Chandler has been implementing its water resource master plan, water conservation plan, water master plan and reclaimed water master plan since 1986 and is prepared for drought. Implementing these plans has allowed Chandler to secure a diverse water supply, build the infrastructure needed to deliver the water supply, efficiently use the water supply and develop a reclaimed water system to supplement the water supply. Chandler has a secure, reliable water supply for its businesses and residents during normal supply years as well as during times of reduced supplies and is continuing to acquire additional water supplies for future growth and development. The drought management plan describes Chandler's existing drought programs and demand reduction measures that will be implemented during severe drought conditions.

Chandler is prepared for drought because it has implemented the following:

- Diversified Chandler's water supplies
- Water conservation program
- Water conservation ordinances
- Reclaimed water program
- Redundant well program
- Underground storage and recovery program

The above listed programs allow Chandler to withstand surface water shortages that periodically occur in the Southwest. However, the City's capability to meet its demand could be at risk during extreme water supply shortage conditions. Considering Chandler's diverse water supply portfolio and existing conservation programs, a 30% reduction in Colorado River water deliveries and / or a 60% reduction in Salt River Project water deliveries would have to occur before mandatory water demand reductions would have to be implemented.

The purpose of this plan is to ensure basic water needs for Chandler residents and businesses will be met during extreme water shortages. This plan will provide procedures to track water shortages, monitor supply and demand during the drought, and identify measures that reduce water demands during extreme water shortage conditions. Mandatory water use restrictions for Chandler residents and businesses will only be implemented when the City anticipates that it cannot meet its projected demand.

The following criteria will be used when mandatory restrictions are implemented:

- 1) Municipal outside water use restrictions will be implemented prior to mandatory water use restrictions for residents and businesses (for water other than reclaimed water).
- 2) Outside water use reductions will be shared equitably among all City water users: municipal, residential, commercial and industrial (for water other than reclaimed water).
- 3) Water users will be informed of the City's water supply condition.

- 4) Water use restrictions will be designed to achieve water use reductions required with the least possible impact on the local economy.
- 5) Mandatory water use restrictions will cease when supplies are adequate to meet the following years projected demands.
- 6) Reclaimed water supplies are not reduced during times of drought, therefore reclaimed water use will not be restricted.

Chandler's Water Supplies

Chandler's water supply comes from allocations from the Salt and Verde Rivers, the Colorado River, groundwater and reclaimed water. Obtaining water rights from surface water sources in different watersheds will help the City withstand droughts that occur within an individual watershed. The City is acquiring additional sources of water and planning the future infrastructure construction needed to meet future supply needs.

Salt and Verde River water supplies come from the Salt River Project (SRP), Roosevelt Water Conservation District (RWCD), and the additional conservation storage recently constructed at Roosevelt Dam. Salt and Verde water is stored in reservoirs and delivered through a series of canals to the City's water treatment plant. SRP can also pump groundwater through a series of wells that discharge into the canals. Water deliveries from SRP can only be used within the project boundaries. This area is considered "Member Lands".

Colorado River water is delivered through the Central Arizona Project (CAP) canal and enters SRP canal system near the Granite Reef diversion dam. This water is then delivered to the City's water treatment plant or recharged into the aquifer at the Granite Reef Underground Storage Project (GRUSP) for future use. Chandler has long-term contracts to receive Colorado River water. Colorado River water is used on lands within Chandler outside the SRP Member lands.

Chandler receives its groundwater through a series of City wells that are connected to the water distribution system. Chandler pumps its groundwater to supplement its surface water supply during peak demands, emergencies and drought conditions. Under State law, Chandler can also pump some groundwater without a replenishment obligation. This is known as safe yield pumping and is the amount of groundwater that can be pumped without a long-term aquifer draw. This quantity, established by the Arizona Department of Water Resources (ADWR), is about 6% of Chandler's total water demands. During droughts, Chandler can also pump groundwater, known as drought pumping, subject to restrictions. Drought pumping is the amount of groundwater that ADWR has deemed appropriate to pump during a drought. This groundwater is used to supplement reduced surface water supplies during droughts. Emergency response pumping is the amount of groundwater withdrawn when an unexpected event has occurred at the surface water treatment plant or canals. During emergencies, Chandler will recover surface water stored underground during normal and surplus runoff years.

Chandler's Drought Preparedness Programs

Diversified Water Supplies

Chandler has worked hard to reduce its reliance on any one water source. Both the SRP water supply and the CAP water supply are subject to drought. If a drought were to occur on either the

SRP or the CAP system, Chandler could tap either surface water system not in drought, its vast groundwater reserves, or both. (Refer to Appendix 1 for a summary of the City's water sources.)

Water Conservation Program

Water conservation is a way of life in Chandler. Chandler actively promotes water conservation practices, regardless of the water supply. The City began its water conservation program in 1990.

Chandler's Water Conservation program uses a combination of financial incentives, free services, and educational activities to encourage water conservation. Low water use landscape and irrigation timer rebates, water audits, leak detection services, water saver kits and educational activities, such as free water conservation classes, informative brochures, public presentations, school education and special events have increased the public's awareness about conserving water. (Refer to Appendix 2 for a summary of the City's Water Conservation program.)

Water Conservation Ordinances

Chandler enacted its first water conservation ordinance in 1990. Today, there are several ordinances that promote water conservation. Chandler has ordinances that require all new construction to install water efficient plumbing fixtures, restrict the amount of water intensive landscaping at newly constructed model homes, businesses, industrial facilities and common areas, and require all new landscape areas south of Pecos Road to use reclaimed water when it becomes available. (Refer to Appendix 3 for a summary of the City's Water Conservation Ordinances).

Reclaimed Water Program

Chandler's Reclaimed Water Program is an environmentally sound way of reusing our water resources while saving our potable water supplies for future uses. Wastewater from kitchens, laundry rooms, bathrooms, and sinks is collected and transported through a system of underground pipes to a water reclamation facility where it undergoes extensive treatment to meet the State's Reuse and Aquifer Water Quality Standards. The reclaimed water is then used for irrigating turf and low water use landscaping at parks, golf courses, residential common areas, roadside landscaping and non-edible crops. It is also recharged into the aquifer for future use.

Chandler has upgraded its water reclamation facilities to create a high quality reclaimed water product that meets all state standards for reuse and recharge. Chandler is also constructing the infrastructure needed to deliver reclaimed water to its end users. When completed, the 38-mile distribution system will deliver reclaimed water to the majority of south Chandler. Reclaimed water, as an irrigation source, is a valuable water resource that Chandler uses to supplement its drinking water supply.

Well Program

Chandler's wells allow the City to pump groundwater during times of surface water shortages and to meet peak summer demands. The well system also supplements the Salt River Project and Central Arizona Project water and acts as a back-up system when the Water Treatment Plant is off line. Currently there are 20 potable water wells connected to the City's water distribution

system. Since 1980, groundwater levels in Chandler have been rising, and today the aquifer below Chandler contains enough water to supply Chandler for over 100 years. Reliance on this large groundwater aquifer during times of drought has always been an integral part of Chandler's long-term water resource planning. Increased groundwater pumping during droughts will not affect Chandler's groundwater supplies because wet weather cycles and artificial recharge will allow the aquifer to refill after a drought.

Underground Storage and Recovery Program

An essential part of Chandler's water resource management plan is its underground storage projects. Chandler recharges CAP and reclaimed water into the aquifer for future use. The largest recharge site is located in the Salt River bed downstream of Granite Reef Diversion Dam, approximately 12 miles northeast of downtown Chandler. The Granite Reef Underground Storage Project (GRUSP) is operated by SRP with Chandler owning 20% of the capacity of GRUSP. In a typical year, Chandler's share of the recharge capacity is 16,000 acre-feet. One acre-foot equals 325,851 gallons and is enough water to meet the needs of a family of five for one year.

During normal surface water supply years, water is placed into GRUSP's spreading basins, where it percolates into the aquifer. This recharged water naturally flows to the west and southwest. Chandler recovers this recharged water through its groundwater wells.

Chandler has three underground storage facilities (USF) located within its service area. The Ocotillo and Tumbleweed USF's recharge reclaimed water treated at the Ocotillo Airport Water Reclamation Facilities into the shallow aquifer. The Reverse Osmosis Facility recharges reclaimed industrial process water from Intel into the middle aquifer. Chandler recharges reclaimed water into the poor quality shallow aquifer through aquifer storage and recovery (ASR) wells. These wells, part of the reclaimed water system, do not commingle reclaimed water with drinking water in the deeper aquifer.

Drought Stages and Implementation Measures

There are four drought stages in this plan. Each stage is based on the severity of water supply conditions and the City's ability to meet the water demand of its users. The trigger point for Stages Two through Four is based on the percent of actual water delivery reductions. Stage One is triggered when staff predicts a water delivery reduction may be announced by SRP or the Central Arizona Water Conservation District (CAWCD) which operates the CAP. Surface water deliveries from SRP can only be used on SRP lands. Therefore, SRP water delivery reductions are considered separately from CAP water delivery reductions.

Chandler is a growing community, and as the City continues to acquire additional surface water supplies, the percentage of water reduction assigned to each stage will vary. Staff will analyze the available water sources and demand for each drought that occurs. The trigger point for each drought stage may be adjusted depending on this analysis. Each stage has measures that will be implemented to ensure the basic water needs of Chandler customers are met. The measures below may be interchanged as needed to ensure Chandler's water needs are met.

Stage One

The Water Resource Manager may declare Stage One when a surface water shortage is predicted. Chandler's Water Resource staff monitors the precipitation and water storage levels of the Colorado, Salt and Verde watersheds. A reduction in water supplies can be predicted several months prior to the actual announcement of the reduction. Staff tracks water shortages so the City is prepared before a supply reduction is made. At this stage of the drought, Chandler is capable of meeting demand through remaining surface water supplies and groundwater wells.

The following measures may be implemented in response to a Stage One event:

- 1) Continue to monitor SRP and CAP surface water supplies and weather patterns.
- 2) Report to the Municipal Utilities Director as water supply conditions change.
- 3) Increase water conservation education messages.
- 4) Develop and implement a public awareness program designed to alert residents of drought conditions and the potential impact to Chandler's water supplies.

Stage Two

The Municipal Utilities Director may declare Stage Two when SRP water deliveries are cut 40% from the delivery of 3.0 acre foot per acre and / or CAP water supplies are cut 10% from the delivery of contract and leased water. At this stage, Chandler is capable of meeting demand through its remaining surface water supplies and groundwater wells. During this stage, the City will use its groundwater reserves to supplement reduced surface water deliveries. When surface water supplies return to normal, the City will need to replace the water withdrawn from its reserves by recharging additional surface water back into the aquifer. Chandler will have to purchase this surface water. Stage Two will implement mandatory reduction in water usage for municipal operations to reduce the impact of the added expense to purchase additional surface water needed to meet demand.

One or more of the following measures may be implemented in response to a Stage Two event:

- 1) Continue to monitor SRP and CAP surface water supplies and weather patterns.
- 2) Report to the Municipal Utilities Director as water supply conditions change.
- 3) Increase water conservation education messages.
- 4) Increase public awareness messages to alert residents of drought conditions.
- 5) Increase groundwater usage. Staff requests a drought exemption from ADWR to allow Chandler to utilize its groundwater reserves pursuant to R12-15-705T of the Assured Water Supply Rules. With a drought exemption, Chandler uses its wells to supplement surface water shortages. With this exemption, 80% of the water pumped to supplement surface water shortages will be exempt from Assured Water Supply Rules and will not retain the legal definition of groundwater.
- 6) Use drought credits stored underground to supplement the additional 20% of water pumped that is legally defined as groundwater.
- 7) Implement mandatory reduction of outdoor municipal water use to compensate for reduced deliveries. Reductions of water use will be recommended by the Municipal Utilities Director and approved by City Department Directors and the City Manager.
- 8) Reclaimed water use is exempt from restrictions.

Stage Three

The City Manager may declare Stage Three when SRP water deliveries are cut 50% from the delivery of 3.0 acre foot per acre and / or CAP water supplies are cut 15% from the delivery of contract and leased water. At this stage, Chandler is capable of meeting demand through its remaining surface water supplies and groundwater wells. The water delivery reductions in Stage Three will require the City to use its groundwater reserves. When surface water supplies return to normal conditions, the City will need to replace the water withdrawn from its reserves by recharging additional surface water back into the aquifer. Chandler will have to purchase this additional surface water. Stage Three requires mandatory municipal and voluntary public water usage restrictions. Educational and public awareness programs will be implemented to encourage voluntary reductions in water use among all water users.

One or more of the following measures may be implemented in response to a Stage Three event:

- 1) Continue to monitor SRP and CAP surface water supplies and weather patterns.
- 2) Report to the Municipal Utilities Director as water supply conditions change.
- 3) Increase water conservation education messages.
- 4) Increase public awareness messages to alert residents of drought conditions.
- 5) Increase groundwater usage. Staff obtains drought exemption from ADWR to allow Chandler to utilize its groundwater reserves.
- 6) Use drought credits stored underground to supplement the additional 20% of water pumped that is legally defined as groundwater.
- 7) Track water demand patterns daily.
- 8) Reduce peak use through mandatory and voluntary water use reductions.
- 9) Implement mandatory municipal and voluntary public reduction of water use:
 - A) Reduction in lawn watering to two times per week. Selected watering days will be determined based on water operation and water resource staff recommendations.
 - B) Limit landscape watering to off peak hours (9pm – 5am).
 - C) Eliminate winter overseeding.
 - D) Shut off all outdoor potable water features.
 - E) Prohibit use of outdoor misters.
 - F) Allow auto/truck washing only if pail and hose with a shut off nozzle are used, or at a commercial facility.
 - G) Reclaimed water use exempt from restrictions.
- 10) Introduce drought surcharge as determined based on the severity of drought condition. Drought surcharge to be recommended by City Manager and approved by City Council. If the Municipal Utilities Director determines that there is a significant possibility that the City's water supplies needed to meet the following years demand may be reduced if drought conditions are not reversed, and it is unlikely that the City will be able to deliver sufficient water to meet all demands, the City Manager may propose an ordinance for Council approval of a schedule of water deficiency rate surcharges following the requirements of A.R.S. 9-511.01 to encourage water use reductions and provide adequate revenues to operate the water utility system in accordance with the water deficiency.

Stage Four

The City Council may declare Stage Four when the Municipal Utilities Director determines that there is a significant possibility that the City's water supplies needed to meet the following year's demand may be reduced if drought conditions are not reversed, and it is unlikely that the City will be able to deliver sufficient water to meet all demands. At this stage, SRP water deliveries would be cut 60% or more from the delivery of 3.0 acre foot per acre and / or CAP water supplies are cut 30% from the delivery of contract and leased water. The water delivery reductions in Stage Four will require the City to use a large amount of its groundwater reserves. Chandler's well system cannot make up the reduced water deliveries. Without mandatory water use restrictions, it is unlikely Chandler will be able to deliver sufficient water to meet all demands during the peak summer months. Mandatory water reductions will target managing the water demands to reduce the peak summer demand. Stage Four will implement mandatory municipal and public water usage reductions to ensure basic water needs for Chandler residents and businesses will be met.

One or more of the following measures may be implemented in response to a Stage Four event:

- 1) Continue to monitor SRP and CAP surface water supplies and weather patterns.
- 2) Report to the Municipal Utilities Director as water supply conditions change.
- 3) Increase water conservation education messages.
- 4) Increase public awareness messages to alert residents of drought conditions.
- 5) Increase groundwater usage. Staff obtains drought exemption from ADWR to allow Chandler to utilize its groundwater reserves.
- 6) Use drought credits stored underground to supplement the water pumped that is legally defined as groundwater.
- 7) Track water demand patterns daily.
- 8) Authorize Municipal Utilities Director to purchase additional drought supplies if available.
- 9) Restrict overseeding (mandatory for municipal and voluntary for public).
- 10) Mandatory municipal and public reduction of water use:
 - A) Lawn watering restricted to once per week. The City Manager shall determine selected watering days for all users of City potable water.
 - B) Tree and shrub watering restricted to once per week. The City Manager shall determine selected watering days for all users of City potable water.
 - C) Limit landscape watering to 9:00pm – 5:00am.
 - D) Prohibit use of all outdoor potable water features.
 - E) Prohibit use of all outdoor misters.
 - F) Allow auto/truck washing only if pail and hose with shut off nozzle are used or at a commercial facility.
 - G) Reclaimed water use exempt from restrictions.
- 11) Implement education program that gives information on plant survival during water use restrictions.
- 12) Other water conservation measures as adopted by the City Council, needed to balance water demand with the available water supply.
- 13) Introduce drought surcharge as determined based on the severity of drought condition. Drought surcharge to be recommended by City Manager and approved by City Council. If the Municipal Utilities Director determines that there is a significant

possibility that the City's water supplies needed to meet the following years demand may be reduced if drought conditions are not reversed, and it is unlikely that the City will be able to deliver sufficient water to meet all demands, the City Manager may propose an ordinance for Council approval of a schedule of water deficiency rate surcharges following the requirements of A.R.S. 9-511.01 to encourage water use reductions and provide adequate revenues to operate the water utility system in accordance with the water deficiency.

Variances

Variances to the water use regulations set forth in this plan may be granted at the discretion of the City Manager or designee. Applicants for a variance must apply in writing to the Municipal Utilities Department, and demonstrate special circumstances such as health and safety needs.

Notifications

The City of Chandler Communications & Public Affairs Department will notify the public of a Stage Four Drought condition and mandatory water use regulations using the available media sources:

- A. A media briefing will be held and a news release in English and Spanish will be distributed to the local media.
- B. Information will be included in City utility bills along with a phone number to call for additional information.
- C. Cable Channel 11 will air a twenty-second slate on a regular hourly rotation during the duration of the drought condition. The slate will include instructions for reducing residential and non-residential water use and a phone number to call for additional information.
- D. Cable Channel 11 will air a "news crawl" to run several times a day, at the top of the hour, during the duration of the drought condition. The crawl will include instructions for reducing residential and non-residential water use and a phone number to call for additional information.
- E. The Home Page of the City's Intranet and Internet Web Sites will include a drought alert message informing employees and the public of the Stage Three or Stage Four drought. Instructions will be provided for reducing residential water use and a phone number will be provided for residents to call for additional information.
- F. The City's "on-hold" phone recording will inform callers of the drought condition and provide instructions for reducing residential water use and a phone number to call for additional information.
- G. Display ads a minimum of four column inches in size will be placed in at least three community newspapers (including one Spanish language paper) with circulations that cover the City's water service area. The ads shall run once monthly during the duration of the drought condition with a phone number to call for additional information.

Accepted By:

Municipal Utilities Director

Assistant Municipal Utilities Director

Date: _____

Date: _____

City of Chandler Drought Management Plan
Appendix 1 - City of Chandler Long Term Average Water Supply¹
(As of January 1, 2003)

Water Source	Water Quantity (Acre Feet per Year)
Salt & Verde River Water	
Salt River Project (SRP)	63,215
Roosevelt Water Conservation District	4,860
Roosevelt Lake New Conservation Storage	5,200
Colorado River Water	
Central Arizona Project (CAP)	3,668
Welton-Mohawk Water	4,278
Salt River Pima Maricopa Indian Community Water	2,586
Roosevelt Water Conservation District Assignment Water	583
Assignment of HoHokahm Water	2,510
Groundwater	
State Groundwater Allowance	2,365
Groundwater Incidental Recharge ² (6.03% of Annual Water Use)	3,345
Total Water Supply	92,610

City of Chandler Stored Groundwater Credits
(As of January 1, 2003)

Water Source	Water Quantity (Acre Feet)
Water Credits for Future Growth & Development	
Central Arizona Project Incentive Water	68,303
Water Credits for Drought Protection	
Central Arizona Project Incentive Water	46,350
Reclaimed Water Credits	
Intel Reverse Osmosis Recharge Facility	5,920
Tumbleweed Recharge Facility	15,478
Ocotillo Recharge Facility	375
Long Term Storage Credits	136,426

¹ At build out under normal water supply conditions.

² Groundwater incidental recharge quantity for calendar year 2002. This quantity will increase as water usage increases until build out is reached; in which time the quantity is projected to level off at 6,281AF/YR.

City of Chandler Drought Management Plan

Appendix 2 - Water Conservation

Chandler implements its Water Conservation Program by utilizing a combination of financial incentives, free services and educational activities. Financial incentives are used to entice voluntary water conservation activities through the use of rebates. Free services are provided to improve water efficiencies inside and outside residential and non-residential settings by offering water audits and leak detection services. Educational activities, such as free water conservation classes, informative brochures, public presentations, school education and special events are provided to increase the awareness of the necessity to conserve water. Some of the programs that are free to Chandler residents include:

Distribution of Water Saver Kits

Water saver kits are available free to Chandler residents who live in homes built prior to 1992. The kits contain low flow plumbing fixtures that can be utilized to replace high flow fixtures that were common in homes built prior to 1992. Replacing high flow fixtures with low flow fixtures can reduce water usage by 50% – 70% per fixture. The kits can be picked up at the Chandler Water Conservation Office, 249 E. Chicago Street (tel: 480-782-3580).

Each water saver kit contains:

- One to two ultra low flow showerheads (2.6 gallons per minute).
- One toilet tank displacement device.
- Two bathroom faucet aerators (1.5 gallons per minute) and one-kitchen faucet aerator (2.2 gallons per minute).
- Dye tabs for toilet leak detection.
- A set of instructions for leak repair and fixture replacement.

Water Audit/Leak Detection

Residents who are unsure about the amount of water they are using at their home or are concerned they may have a leak, can call the Chandler Water Conservation office for help. The audits are offered free to all Chandler residents either as a water audit conducted by City staff or through a kit that can be used by a resident to conduct the audit themselves. During the audits, residents learn how to examine indoor and outdoor water use practices, detect leaks, inspect sprinkler and drip irrigation systems, obtain irrigation scheduling advice and receive water saving tips.

Low Water Use Landscape Packets

The City currently delivers a landscape packet to all residents who purchase new homes in Chandler. The packets are delivered when the residents receive their first recycling bins in an attempt to reach the resident prior to landscape installation. The landscape packet contains a “Complete Guide to Home Water Management” and various brochures with information on reclaimed water, low water use landscaping, drip irrigation, and irrigation scheduling.

Landscape Watering Advice

Chandler employs a full time Water Conservation Specialist who speaks directly with residents and visits their homes to discuss water management, and irrigation system maintenance.

Landscape Plant Advice

Chandler employs a full time Water Conservation Coordinator that is available to speak to residents about proper selection, installation and maintenance of low water use plants.

Free Water Conservation Classes

Water conservation classes are offered free to all Chandler residents several times throughout the year. The classes continue to be extremely popular with Chandler residents. Classes include:

- **Low Water Use Landscaping:** This three-night class instructs residents on how to plan, design, and select plant material and maintain a low water use landscaping.
- **Drip Irrigation:** This one night class teaches the basics on the installation, design, maintenance, and repair of drip irrigation systems.
- **Yard Watering:** This one night class demonstrates simple ways to develop efficient watering schedules for trees, shrubs and grass as well as the operation of irrigation control timers.
- **Irrigation System Maintenance:** This one night class instructs residents on the basics of auditing and repairing irrigation systems.
- **Pruning and Maintaining Your Landscape:** This one night class informs residents about how proper selection, installation and maintenance can allow the plants to use water more efficiently.
- **Water Wise Edible Gardening:** This one night class reviews soil amendments, composting, efficient irrigation systems, timing of irrigation and selection of plants to have a healthy, water wise edible garden and landscape.

Low Water Use Landscape Rebate Program

The City of Chandler offers \$200 to residents who convert their landscape from turf to low water use landscaping (Xeriscape) or who install low water use landscaping at a new home. Once eligibility is verified, a Water Conservation Specialist visits the resident at their home to discuss irrigation scheduling, timer operation and system maintenance.

Rebate Qualifications:

- The entire front and back yards must be landscaped.
- The total landscapable area must exceed 1000 sq.ft.
- After installation or conversion, a minimum of 50% of the total landscapable area must be non-turf inorganic ground cover. Primary accent plants for the landscapable area need to be drought resistant shrub and trees.
- Conversions will qualify only if at least 1000sq.ft. of turf has been removed.
- The landscaping must be inspected by the City's Water Conservation Office to ensure compliance.

Automatic Irrigation Controller Rebate

The City of Chandler offers \$50 to residents who install an automatic irrigation control device. The automatic control must be electrically activated and installed according to City Code. An irrigation permit is required along with an inspection by a building inspector.

Public Awareness Activities/Special Events

Chandler's Water Conservation staff participates in several festivals and special events throughout the year. A booth is set up and water conservation materials are distributed to Chandler residents. Hundreds of people attend these functions and visit the water conservation booth to ask questions and to pick up informational materials.

Staff is available for speaking engagements on a variety of water conservation topics. They give presentations at local community centers, libraries, civic groups and homeowner's associations.

School Education Program

Chandler's school education program is one of the most beneficial water conservation programs the City provides. School children are taught the water conservation message through entertaining yet informative shows and presentations. The City offers the following presentations:

- Water Conservation Puppet Shows that explain the importance of conserving water and demonstrates methods children can use to save water at their homes.
- Water Conservation Assemblies that use games, magic and skits to present water conservation tips and the water cycle to children in grades K through 5.
- City Water Conservation staff visit schools, to discuss a variety of topics which include Chandler's water resources, the water cycle, water conservation in the school and home, landscape watering, in-home water audits and the use of water in our lives.
- In April, the Water Conservation Staff puts on a Water Festival for fourth grade students in Chandler. These students learn, through hands on activities, about our water history, the water cycle, and how to conserve water.

City Low Water Use Demonstration Gardens

Chandler maintains three Xeriscape demonstration gardens, one at Arrowhead Park, one at the Chandler Library and the other at Desert Breeze Park. The gardens give Chandler residents a visual representation of desert landscaping techniques and low water use plants. Each garden is loaded with beautiful low water use plants that are identified with plant labels.

Publications

The Water Conservation Office has a variety of free brochures and literature on topics such as low water use landscaping, reclaimed water, efficient irrigation watering, low water use plant selection, drip irrigation, home water management and water saving tips.

Additional Water Conservation Activities

One of Chandler's strategies to counter any SRP water allocation reductions is to increase its already active water conservation program. Some of the current and planned activities include:

- Increase advertising that promotes Chandler's landscape conversion rebate program. Informational cards that advertise the program have been mailed to residential areas with a high concentration of turf landscaping.
- Developed and distributed a toilet leak detection brochure. Brochures were mailed to residential areas that were built before the plumbing codes changed to require low flow fixtures.

- Developed a reclaimed water brochure which highlights how the City uses this safe, valuable resource. Brochures will be available to residents directly from our office, through our new home owner packets, or through direct mailings.
- Initiate a leak detection program investigating City water distribution pipelines that are over 20 years old.
- Work with other valley cities to increase water conservation messages sent through the “Water Use it Wisely” campaign.
- Increase public awareness of the drought conditions and water conservation tips.
- Include information in our public workshops about how possible landscape watering restrictions will affect plants.
- Analyze Chandler’s well purging program and reduce purge times where possible.

Conservation Practices within City Departments

Water conservation is a way of life in Chandler. City departments have been actively practicing water conservation however, Chandler will assess its City water use to determine if there are further actions that can be taken to reduce water usage without affecting the quality of service.

- Efficient watering of City parks – we have a computerized irrigation scheduling program that allows convenient scheduling adjustments during rain events and temperature changes. The computerized system also detects leaks when there are irrigation main and sprinkler breaks, and irrigation valve malfunctions.
- Chandler is implementing a leak detection study on 70 miles of distribution pipes that are over 20 years old. Funds have been budgeted in our Capital Improvement Program to replace the pipe where warranted. This will be an annual program until all of the older distribution lines have been analyzed.
- Large water meters are audited every year to detect leaks and determine accuracy. Smaller two inch water meters that are over ten years old will be audited once every five years.
- City parks, golf courses, and common areas in homeowner associations in South Chandler use reclaimed water for irrigation.
- Chandler is converting some of our turf retention basins to low water use landscaping.
- Our water production plant and water reclamation facility recycles the wastewater generated during the treatment process.
- All of Chandler’s new right-of-ways are required to use low water use plants when potable water is used to irrigate.
- Chandler’s Park Department use soil amendments in areas that have poor infiltration to increase water application efficiencies.
- Reduced irrigation applications are used on Chandler’s parks during times of surface water shortages.
- Chandler is converting parks that use drinking water over to reclaimed.

Appendix 3 - Ordinances

Ordinance for Water Efficient Plumbing Fixtures in New Residential and Non-Residential Buildings

Chandler adopted Ordinance No. 2431 on January 27, 1994. This ordinance requires all new residential and non-residential buildings to have water efficient plumbing fixtures installed. Likewise, replacement of plumbing fixtures in existing residential and non-residential buildings must meet water efficiency standards.

The following residential and non-residential plumbing water efficiency standards have been enacted:

- Faucets (kitchen and lavatory) 3.0 gallons per minute (gpm)
- Replacement aerators – (kitchen and lavatory) 3.0 gpm
- Metering faucets .25 gallons per cycle
- Gravity tank-type, blowout and flushometer toilets 1.6 gallons per flush (gpf)
- Showerheads 3.0 gpm
- Urinals (automatic, timed and self-flushing urinals are prohibited) 1.0 gpf
- Evaporative cooling systems/decorative fountains must be equipped with water recycling or reuse systems.

Landscaping Ordinance for Model Homes

To encourage the use of reclaimed water, Chandler adopted Ordinance No. 2276 in June of 1992. This ordinance requires model homes in new developments to use low water use landscaping in front yards to set the tone for landscaping by homeowners. This measure helps educate homebuyers about the possibilities of low water use landscaping for the area. At least 80 % of the landscaping area of model home sites must consist of low water use plants. If turf is used in the remaining 20%, it is restricted to areas where it is functionally useful. This ordinance is not enforced if reclaimed water is used for irrigation, as turf limits do not apply in such cases (see Reclaimed Water section). Efficient irrigation systems must be installed in all areas.

Landscaping Ordinance for Commercial and Industrial Developments, New Multi-Family Developments and Common Areas of Home Owner Associations.

Ordinance No. 2119 was approved in 1990. This ordinance amended Section 1903 of the City Zoning Code to limit turf and other high water use plants within the landscaping areas of new Multi Family, Commercial and Industrial Developments as well as common areas of Home Owner Associations (unless served entirely by reclaimed water).

Specifically, Ordinance No. 2119 requires:

- Water intensive landscaping within Commercial and Industrial Developments shall not exceed 10% of the landscapable area (except those watered with reclaimed water).
- Water intensive landscaping within Multi Family Developments shall not exceed 40% of the landscapable area (except those watered with reclaimed water).
- Water intensive landscaping within common areas of Home Owner Associations shall not exceed 40% of the landscapable area (except those watered with reclaimed water).
- There will be 0% high water use landscaping along streets rights-of-way when potable water is used.

- Only plants from the Arizona Department of Water Resources Low Water Use List may be used in the remaining area.
- All irrigation systems shall be efficient.
- Limited use of water features/fountains unless served with reclaimed water.

Reclaimed Water Use Ordinance

Ordinance No. 2961 was approved April 22, 1999. This ordinance amended Section 1903 of the City Zoning Code to require that when reclaimed water is available, all new public recreation facilities and other developments with a water intensive landscaped area of five (5) or more acres shall be watered with reclaimed water supplied by the City either directly or from recovery wells. When reclaimed water is not available, the amount of water intensive landscaped area utilized will be restricted according to the provisions stated in Ordinance No. 2961.